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ABSTRACT

The extent to which the issue of nuclear war technology is treated in middle-school science texts, and how students learn about nuclear war and war technology were studied. Five raters compared the most widely used textbooks for grades 6 and 7 to determine the amount of content on: (1) population growth; (2) world hunger; (3) war technology; (4) air quality; and (5) water resources. A survey of 100 students in grades 6 and 7 determined what they thought were serious world-wide concerns and what their sources of information were. Of 4,393 pages of textbook content, less than 2% were devoted to these serious human problems and less than half a page was found on issues related to war technology. Students identified the threat of nuclear war and AIDS as their most serious concerns. They indicated that television was the most used and best informed source of information on these issues. With teachers relying heavily on textbooks, and students drawing so much information from television, a vacuum is created in the school. Educators must address these issues by improving textbooks and using the power of television. Thirty references are listed, and an appendix contains seven tables of study data. (SLD)

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Middle School Students Science Textbooks, Television and Nuclear War Issues

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Middle School Students
Science Textbooks, Television and Nuclear War

Abstract

This study examines the extent to which the issue of nuclear war technology is treated in middle school science textbooks and where students learn about nuclear war and war technology issues. Five raters compared the ten most widely used sixth and seventh grade textbooks to determine the amount of content presented on five major global issues including war technology, and the degree of depth in which issues were treated. Differences between grade levels were also explored. In addition sixth and seventh grade students were surveyed to determine where they learned about war technology issues and television's impact on this knowledge.

Of the 4,393 pages of textbook content analyzed, less than 2% was devoted to issues identified by science experts as the most serious human problems. Most of the issues content fell into the categories of water resources, population growth and air quality. The issue of war technology had the least amount of content and was not mentioned in most textbooks. No significant differences were found between textbook series. Both grade levels addressed the issues of population growth, air quality and water resources with a much greater degree of depth than the issue of war technology.

In a survey of 100 middle school students, sixth and seventh graders identified the threat of nuclear war and AIDS as their most serious concerns. Students indicated they received most of their information about these issues from television news. They rated television above books, newspapers, teachers and parents as the "best informed medium". This study addresses the implications of students receiving science information (as significant as war technology issues) from television.

Introduction

At the very time the world is experiencing an unprecedented social and technological crisis American students are being taught less about important global problems like nuclear weapons. Research indicates that textbooks avoid discussion of nuclear issues. In surveys of students we found that television, by default, ends up providing the bulk of the information. The image of nuclear warfare is framed by the aesthetic of a particular technology--namely television. With fast, fragmented images and show-business values, TV screens around the world pay closer attention to nuclear issues than most school curriculums.

Children and the Nuclear Vision

Issues surrounding the nuclear war threat are increasingly commanding public attention. Surveys of citizens, science experts, teachers, science educators and students identify war technology as an acute world problem (Bybee, 1984, Bybee, 1985, Bybee & Mau, 1986). There is a large body of accumulating evidence that children are concerned about this threat. Research data point to the early development of awareness and attitudes. In many clinical studies, surveys and informal interviews, students have expressed their fears. Children indicate a sense of things being out of control, and their own uncertaintys about a future (Bachman, 1983, Beardslee & Mack, 1983, Goodman, et. al, 1983, Mack, 1984).

Even large numbers of first and second graders are aware of, and pessimistic about war and nuclear weapons. Many older children believe a nuclear war will occur in their lifetime (Task Force Report to the American Psychiatric Association, 1982). Television has integrated this issue into popular mythology by way of fragmented vignettes. Children's programs

are often half hour commercials for toys that fight mythical wars with nuclear weapons. But when it comes to school they're not considered "old enough" to deal with the issue (Adams, Hamm, 1985).

Does the avoidance of serious discussion of nuclear issues contribute to increased levels of fear and anxiety in children? Harvard Medical School survey studies suggest that from an early age many children are thinking about nuclear war, usually without any input from their parents or teachers. Students overwhelmingly report receiving little or no information about nuclear issues at school (Goldenring & Doctor, 1984). Teachers tend to avoid discussions and study of topics related to war--and parents leave it to the fragmentary logic of television to create a basic understanding of the issue.

Researchers are beginning to construct a disturbing view of the possible negative effects on personality development of those growing up under the nuclear threat (Beardslee & Mack, 1982, Escalona, 1982, Lifton, 1982, Riefel, 1984, Schwebel, 1982). Middle childhood has been identified as a crucial time when children's self concept can be negatively affected by adults who behave in passive apathetic ways regarding nuclear destruction.

Surveys of 5000 young people twelve to eighteen years old drawn from the population registry in Europe and the U.S. showed that anxiety about war is widespread. Nuclear war was mentioned as a major fear and mentioned more often than any other fear in each age group (Solantantaus, et. al, 1984). Other studies support these findings. Task force studies done by the American Psychiatric Association between 1978 and 1980 found that 50 percent of high school students reported that nuclear advances affected their plans for the future. In a British survey of 422 teenagers

over half thought that a nuclear war would occur in their lifetime (Business Decisions, Ltd., 1983). These concepts were framed by the vital link between TV and the perceived metaphors of existence.

Must Teaching About Nuclear Issues Involve Controversy?

The results of studies with children on nuclear issues are not without controversy. Critics have emphasized an underlying circularity; peace activists pose suggestive questions to children provoking responsive declarations of anxiety and fear. Critics also contend parents project their concerns onto their children. This concern has prompted social scientists to embark upon long term studies to emphasize the complexity of what really weighs on the minds of children as opposed to thoughts they occasionally have or in a response to discussions initiated by others. Preliminary results indicate that socioeconomic class has a great influence in the way children think about the nuclear threat.

Over a quarter of the children in the United States are classified as living in poverty--and these children worry more about immediate threats of housing and hunger than they do about threats of nuclear disaster. Children whose parents are blue or white collar workers worry less than children from well educated upper class backgrounds (Coles, 1986). But almost all children--even those living five or six to a room in a New York welfare hotel--have a TV set to create a mythical mental map for them.

Empirical evidence may suggest that our society and our children feel the issue is an important one, but it is teachers who will have to bypass the instructional materials vacuum to give children a glimpse of what is important.

Despite the fact that teachers rank nuclear issues as one of the problems of greatest importance, they acknowledge that little emphasis is now given the topic in their classes (Bybee, 1985). Much of this is due to a large dependence on textbooks. NSF studies show over 90 percent of science teachers use a textbook 95 percent of the time (Harms & Yager, 1980, Yager, 1983). Textbooks are the hub around which the curriculum evolves. They play a major role in influencing both how and what a child learns in school (Yager, 1983,1987).

The Current Status of Science Education: Textbook Dependence

The status of science education has been the focus of much national attention in this decade. Critics cite a declining student interest in science (Weiss, 1978), the scant attention paid to personal and social issues (Hurd, Kahle, & Yager, 1983), and the omission of interdisciplinary technological, social and scientific concerns (Dede & Hardin, 1973) as failures of science education in a technological age. The implication here is that students should be provided with direct decision-making experiences that focus on science technology and society. Instead, science for the majority of the population is the relatively uninspired information contained in standard textbooks. Everyone but teachers and students have placed demands on the publishers.

Schools and publishers are locked in a symbiotic relationship that avoids many important global problems. Textbook publishers are pressured--by forces ranging from profits to school boards--into pushing aside "sensitive" or "controversial" issues.

To what extent are textbooks attractive transmitters of key concepts in science? Studies by the National Science Foundation report a virtual lack

of scientific and technological literacy among American students (NSF, 1982) and a presidential commission identified the science education of the majority of American students as a serious problem (NSF and Department of Education, 1980). Students exhibited high degrees of misunderstanding about science concepts and the application of those concepts (NSF, 1982). At the same time science and technology are becoming increasingly important in the lives of ordinary citizens.

In the midst of the debate, teaching science from a Science-Society Technology (STS) prospective has emerged as a new conceptual framework for science education. STS focuses attention on the impact of science and technology and its relationship to society. It emphasizes a problem solving approach proceeding from problem identification to problem resolution. For the average individual awareness of the social, moral and ethical implications of science are crucial to understanding the role of science and technology in a complex world society. Dealing with societal issues and approaching science with a broad awareness of the personal and social dimensions helps students connect the abstract scientific knowledge to their own personal-social needs and concerns.

The approach of this research study was to analyze science textbooks' concerning one aspect of the STS theme; global problems related to science and technology. The most widely used sixth and seventh grade textbooks were examined for their treatment of five top ranked global problem issues including the issue of war technology. This study focuses on the extent to which textbooks addressed these issues. It also examines the differences between the amount of content devoted to each issue per text, per grade level, and the degree of depth in which issues were presented.

In addition, sixth and seventh grade students were surveyed to determine how they learned about nuclear war and war technology.

Method

The global issues chosen for this study were based on data collected from national and international surveys of scientists, engineers and science educators considered experts in their fields (Bybee, 1985; Bybee & Mau, 1986). Nearly 400 scientists from over 40 countries identified population growth, world hunger, war technology, water resources, and air quality and atmosphere as the most serious problems facing the planet. There was a consensus that these science and technology related global problems would be worse by the year 2000.

Five independent coders comprised of science coordinators, teachers, and content specialists examined the most widely used sixth and seventh grade science textbooks. To determine the sixth and seventh grade science textbook series in greatest use a search was made of related periodicals and research studies. University experts were contacted as well as the California State Department of Public Instruction who had just finished a textbook project in science education. Based on these findings ten textbooks were chosen (Appendix, Table 1).

The sixth grade level was selected because it is the end book of a kindergarten through six series. If issues were treated by elementary texts it was felt that sixth grade textbooks would reflect this treatment in the most depth. Seventh grade texts were chosen so that a two year consecutive comparison could be made. They were also selected because different authors are responsible for seventh grade texts than K-6 series.

Textbook coders were trained in using a rating instrument developed by the investigators. Raters were asked to code content by number of pages per category and determine the degree of depth in which the content was treated by each textbook.

An informal survey was distributed to one hundred sixth and seventh grade students in San Francisco Unified Schools. Students were asked to assess where they picked up most of their knowledge on issues about nuclear war and provide comments about this information.

Analysis of Data

A content analysis of the 4,393 pages in ten 6th and 7th grade textbooks indicated that 80.5 pages or 1.8% of the content addressed the global issues of population growth, world hunger, war technology, air quality and water resources. [38.5 pages were found in 6th grade textbooks, and 42 pages of content in 7th grade texts.] Less than one half a page of content was found on topics related to war technology.

Textbooks were examined in direct comparisons at each grade level. The chi-square test revealed statistical differences only between Merrill and Holt textbooks at the sixth grade level. These differences were largely due to the distribution of the number of pages of content among categories. No statistical differences were found between any of the other textbook series compared.

When the issue of war technology was compared with the other issues there were significant differences in every category. Nearly all global issues addressed at the sixth and seventh grade levels fell into the categories of population growth (30.1% or 24.25 pages), air quality (29.2% or 23.5 pages) and water resources (33.2% or 26.75 pages). The categories

of war technology and world hunger together accounted for less than 8% or 6 pages [Table 2].

Significant differences were found at both the sixth and seventh grade levels among the category issues [Tables 3,4]. However, when sixth grade textbooks were compared with seventh grade texts by category the chi-square test of association showed no significant differences [Table 5]. Both levels gave approximately the same treatment to individual issues. Coders reported very little difference not only in the amount of pages of content in each category, but in the content itself; the same examples were even used across grade levels in many instances.

Textbooks were rated on a four point scale (0-3) as to the degree of depth in which issues were treated. The scale was divided into a classification system based on Bloom's Taxonomy (Bloom, 1956). It consisted of four hierarchical categories. [0-no content presented; 1-awareness level (survey or recall); 2-comprehension; 3-application, synthesis, evaluation]. The Kruskal-Wallis non-parametric test was used to test for differences in the way each issue was treated. Significant differences were found among sixth grade textbook series in their treatment of all of the issues. Holt and Merrill texts received the highest average rating over all categories. (A graphic representation of this data is shown in Table 6.)

At the seventh grade level significant differences were found concerning the degree of depth in which they treated air quality and water resources. The issue of war technology was not treated at all by the seventh grade textbooks examined [Table 7]. Again, there were no significant differences between grade levels as to the degree of depth at

which each issue was treated. Less than 5% of the issues content analyzed was presented at a problem solving level.

In surveys of 100 students the vast majority indicated that they received most of their information about nuclear warfare issues from television--and little from textbooks. TV news was cited by students as a major source for information on issues--far ahead of textbooks, newspapers, or magazines.

Summary, Implications

Pedagogical dependency on textbooks is clear. So is their lack of intellectual depth on many global issues. This study finds that less than two percent of the contents of sixth and seventh grade science textbooks deal with serious global issues. [Percentages range from .2 to 4.4 percent of the total text]. There is little difference between either textbook series or designated grade level in the number of pages devoted to the issues of world population, war technology, world hunger, air quality and water resources.

Although the issues of world population, air quality and water resources were dealt with, the issue of war technology received little or no attention. Many scientists suggest that the Strategic Defense Initiave ("Star Wars") may be directing American science for the next decade--but there is no mention of it in textbooks.

In 1982 the National Science Teachers Association has recommended that science curriculums begin to examine societal issues that have a scientific and technological basis (NSTA, 1982). With accumulating evidence that the science textbook ends up being the primary curriculum for science (Stake & Easley, 1978, Yager, 1983), NSTA correctly assumes

science curriculums are still at the very beginning stages connecting major issues and science concepts. The conclusions drawn from this study support the NSTA's position and show empirically how textbooks avoid important social consequences of science.

There is a need to explore how important--yet neglected--problems of humanity can be brought into both textbooks and the curriculum. There is a need to investigate the relationship between teaching critical global issues and the formation of children's attitudes about these problems. This includes a more thorough understanding of the characteristics of effective instruction.

Textbooks play a major role in influencing both *how* and *what* a child learns in school. Therefore they must be viewed as key elements in school reform. No matter how controversial, it is important that textbooks reflect current scientific issues and global concerns. Studying about these concerns provides children with a problem solving background in science concepts. It also helps them gain the level of scientific literacy so crucial to being an informed citizen in our technologically intensive future.

Influence of Broadcast Television

Our survey of sixth and seventh grade students indicates they have many of the same things on their minds that adults do. The threat of nuclear war, and AIDS were identified as top fears. Drug use, having to fight a war, air and water pollution were mentioned as other causes for worry. Students indicated they received the bulk of their information about these and other topics from television. They rated television above textbooks, newspapers, current events magazines, teachers, and parents as

the "best informed medium". Comments from students frequently expressed the idea that "you can see for yourself what's happening".

Middle school students assimilate many of these attitudes from their parents. In a 1987 Roper poll 50 percent of adults described TV as a primary news source, 55 percent called it the most credible news medium.

With its fast, fragmented images and show-business values, home video screens around the world pay more attention to nuclear issues than most school curriculums. Thus the image of nuclear warfare is framed by the aesthetic of a particular technology--namely television.

In light of the lack of textbook coverage where are teachers going to receive information on this issue? Surveys of science educators, teachers and curriculum specialists indicated they did not feel knowledgeable about issues related to war technology (Bybee & Mau, 1986). This leaves classroom teachers to their own devices for translating educational aims into curricular programs and instructional practices. With teachers relying so heavily on textbooks--and students drawing common cultural experiences from television--a vacuum is created in the schools. All is not gloom and doom, however. California and Massachusetts state boards of education are asking textbook publishers to improve the content and quality of textbooks.

Using Television As An Educational Tool

If educators feel uninformed on this issue they are not alone. In 1987 a group of Boston high school students petitioned local broadcast networks demanding national time to air an educational forum on the nuclear arms issue aimed specifically at a high school audience. They believed television to be the best medium for getting young people aware of an issue that they

are passionate about (Knobelsdorff, 1987). Public pressure was so great that they were given air time for their discussion.

The evidence is overwhelming that television does influence children's views of social reality, social attitudes and their beliefs about the ways people behave in the real world (Noble, 1975). Television has power to define the unknown. It seems to be especially influential in forming attitudes and knowledge on topics with which the child lacks experience. More than the medium itself, it is the social context and use of a medium that determine the medium's impact on children's ways of thinking.

Television with its dynamic visual images, is more easily understood and remembered than words. Television is most effective when used in schools to communicate information followed by class discussion directed by the teacher. Children's ability to explain what they have seen on television may well depend on the teacher-pupil dialogue that surrounds the presentation. Like print, television is not a substitute for human interaction, but must be combined with and enhanced by it.

The mass media has become the common culture of America and the "teacher" of our times. As such it has a responsibility to openness and information. Media can become the bridge between broad ethical concepts and applied rules of practice. Framing a reasonable vision for discussion of important human issues, like war technology, is an unfinished concept that may become a major new frontier in education and international relations.

Life around the globe is increasingly lived in the shadows of the standardized image. Yet the same media can educate us with the lightest possible hand. Even in a technologically complex society, it is usually a human idea that touches the human conscience.

Future Schools Will Incorporate TV Broadcasts

As we improve textbooks and reach the limit of what a school system can do we will have to dip into the television's visual medium. Television has the potential for becoming a learning system that vividly presents an issue as complex as nuclear warfare in a manner that everybody can understand. We are just beginning to mine the use of video as a learning tool. Education is increasingly turning to modern communication technology and satellite technology even mocks national boundaries.

Knowledge about nuclear issues is just one of the educational vacuums waiting to be filled by television. It's great manipulative power can be used to teach controversial issues, and present citizens with the information need to make informed decisions. It is possible to provide students in the nuclear age with a sense of hope and tolerance to act in the human interest with some sense of responsibility and empowerment. School textbooks and the mass media can make global issues a part of the common knowledge of mankind.

References

Adams, D. & Hamm, M. (1986). Educational Computing: Issues, Trends and a Practical Guide. Springfield, IL: Charles Thomas Publisher.

Adams, D. & Hamm, M.(1987). Electronic Learning. Springfield, IL: Charles Thomas Publisher.

Beardslee, W., & Mack, J. (1983). Adolescents and the threat of nuclear war: the evolution of a perspective, Yale Journal of Biology and Medicine, 5679-81.

Bloom, B. (1956). Taxonomy of educational objectives: the classification of educational goals. New York: Longman, Green.

Business Decisions Ltd. (1983). Nuclear weapons study: a summary report, prepared for the TV Times. London.

Bybee, R., (1984). Global problems and science education policy. 1984 NSTA Yearbook. Washington, D.C.: National Science Teachers Association.

Bybee, R. (1985). The restoration of confidence in science and technology education. School Science and Mathematics, 85(2).

Bybee, R., Mau, T. (1986). Science and technology related global problems: International survey of science educators. Journal of Research In Science Teaching, 23(7), 619-634.

Bybee, R. (1987). Teaching about science-technology-society (STS) views of science educators in the United States. School Science and Mathematics, 87(4), 274-285.

California Department of Education. (1986). Published Proceedings On Textbook Selection, Science Education.

Coles, R. (1986). The Moral Life of Children. Boston: Atlantic Monthly Press.

Escalona, S. (1982). Growing up with the threat of nuclear war: some indirect effects on personality development. American Journal of Orthopsychiatry, 52(4), 600-607.

Goldenring, J. & Doctor, R. (1984). Adolescents' concerns abouth the threat of nuclear war. Prepared statement before the Select Committee On Children, Youth and Families. U.s. 98th Congress, 1st session, H. Rept. Washington, D.C.

Goodman, L., Mack, J., Beardslee, W., & Snow, R.(1983). The threat of nuclear arms race: adolescent experience and perception. Political Psychology, 4, 501-530.

Hamm, M., Adams, D.(1987) "An Analysis of Global Problems Issues In Sixth and Seventh Grade Science Textbooks", ERIC Clearinghouse.

Harms, N., & Yager, R. (1981). What Research Says To the Science Teacher, 3. Washington, D.C.:NSTA, 471-14776.

Hurd, P., Bybee, R., Kahle, J., & Yager, R. (1983). Biology education in secondary schools American Biology Teacher, 42(7), 388-410.

Knobelsdorff, K. (1987) Students ask for nuclear forum on TV. Christian Science Monitor, Tuesday, April 14.

Lifton, R. (1982). Beyond nuclear numbing. Teachers College Record, Fall.

Mack, J. (1984). Resistances to knowing in the nuclear age. Harvard Educational Review, 54(3), 260-270.

National Science Board. (1982). National Science Foundation Study. Washington, D.C: U.S. Government Publications.

National Science Foundation and Department of Education. (1980). Science & Engineering Education in the 1980s & Beyond. U.S. Government Printing Office.

National Science Teachers Association. (1982). NSTA Position Statement On School Science Education for the 1980s. Washington, D.C.:NSTA.

Noble, G. (1975). Children In Front of the Small Screen. London: Constable.

Reifel, S. (1984). Children living with the nuclear threat. Young Children, 39(5), 74-80.

Schwebel, M. (1982). Effects of the nuclear threat. American Journal of Orthopsychiatry, 52(4), 608-618.

Solantaus, T., Kimpela, M., Vappu, T. (1984). The threat of war in the minds of 12-18 year olds. Lancet, 8380, 784-785.

Stake, R. & Easley, J., et. al. (1978). Case Studies in Science Education. Urbana: University of Illinois.

Weiss, I. (1978). Report of the 1977 National Survey of Science Education. Washington, D.C.: U.S. Government Printing Office.

Yager, R. (1980). Crisis In Science Education. Technical Report #21, The University of Iowa, Science Education Center.

Yager, R. (1983). In defense of societal issues as organizers for school science. School Science and Mathematics, 83(3), 651-653.

Yager, R. (1987). Problem solving: the STS advantage. Curriculum Review, 26(3), 19-21.

Appendix

Table 1
Sixth and Seventh Grade Textbooks Used In Study

Silver Burdett Science, Silver Burdett Co., 1985 -Grade 6
HBJ Science,HBJ Science, Harcourt, Brace, Jovanovich, 1985 -Grade 6
Holt Science, Holt, Rinehart & Winston, 1986 -Grade 6
Accent On Science, Charles E. Merrill, 1985 -Grade 6
Science, Scott Foresman, 1986 -Grade 6

General Science, Silver Burdett Co., 1984 -Grade 7
Principles of Science, Charles E. Merrill, 1985 -Grade 7
Holt Life Science,Holt, Rinehart & Winston, 1982 -Grade 7
Life Science, Scott Foresman, 1986, -Grade 7
Life Science, Macmillan, 1986 -Grade 7

Table 2

Percentage of Pages with Global Problems Content for Each Textbook

Textbook	N	T	%t	%g
Holt 6	18	407	4.4	46.8
Silver Burdett 6	.75	379	.2	1.9
Scott Foresman 6	2.25	394	.6	5.8
Merrill 6	16	389	4.1	41.6
HBJ 6	1.5	390	.4	3.9
Holt 7	8.5	478	1.8	20.2
Silver Burdett 7	3.75	474	.87	8.9
Scott Foresman 7	10.25	478	2.1	24.4
Merrill 7	12.5	512	2.4	29.8
Macmillan 7	7	492	1.4	16.7
All Textbooks	80.5	4393	1.8	
6th Grade Texts	38.5	1959	1.96*	
7th Grade Texts	42	2434	1.72*	

N-number of pages of global issues content

T-number of pages in the textbook(s)

%t-percent of the pages in the text with global issues content

%g-percent of issues content compared to other textbooks for that grade

*percent of all issues content presented in 6th and 7th grade textbooks

Table 3
Pages of Content by Category for 6th Grade Texts

Category	Total Pages in Texts	f expected
Population	11.5	7.7
War Technology	0.5	7.7
World Hunger	3	7.7
Air Quality	11	7.7
Water Resources	12.5	7.7

Total number of pages for all categories-38.5
χ (4, N-5)-15.88, $p < .05$+, $p < .01$++

Table 4
Pages Of Content by Category for 7th Grade Texts

Category	Total Pages In Texts	f expected
Population	12.75	8.4
War Technology	0	8.4
World Hunger	2.5	8.4
Air Quality	12.5	8.4
Water Resources	14.25	8.4

Total number of pages for all categories=42.0
χ^2 (4, N=5)=20.86, $p<.05$+, $p<.01$++

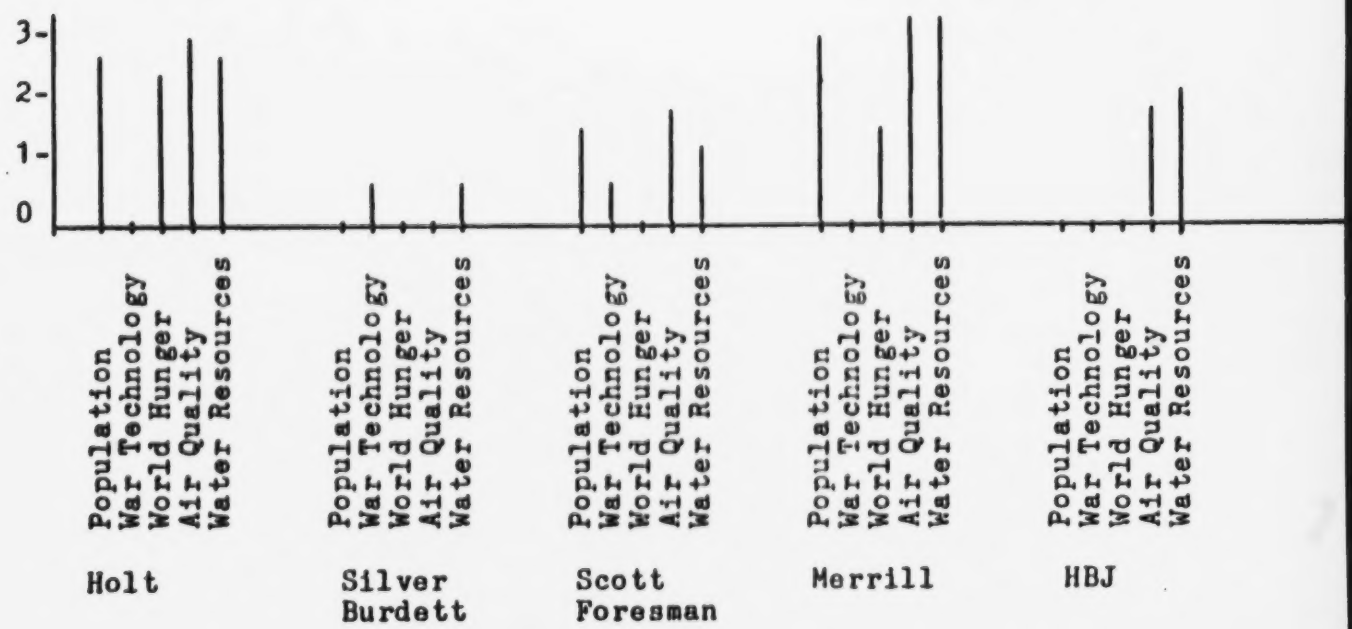
Table 5
Pages of Content By Category According To Grade Level

Grade	Population	Hunger	War Tech.	Air Quality	Water Resources
Sixth	11.5	3	.5	11.5	12.5
Seventh	12.75	2.5	0	12.5	14.25

x (4, N-5)-.67, p>.05

Table 6

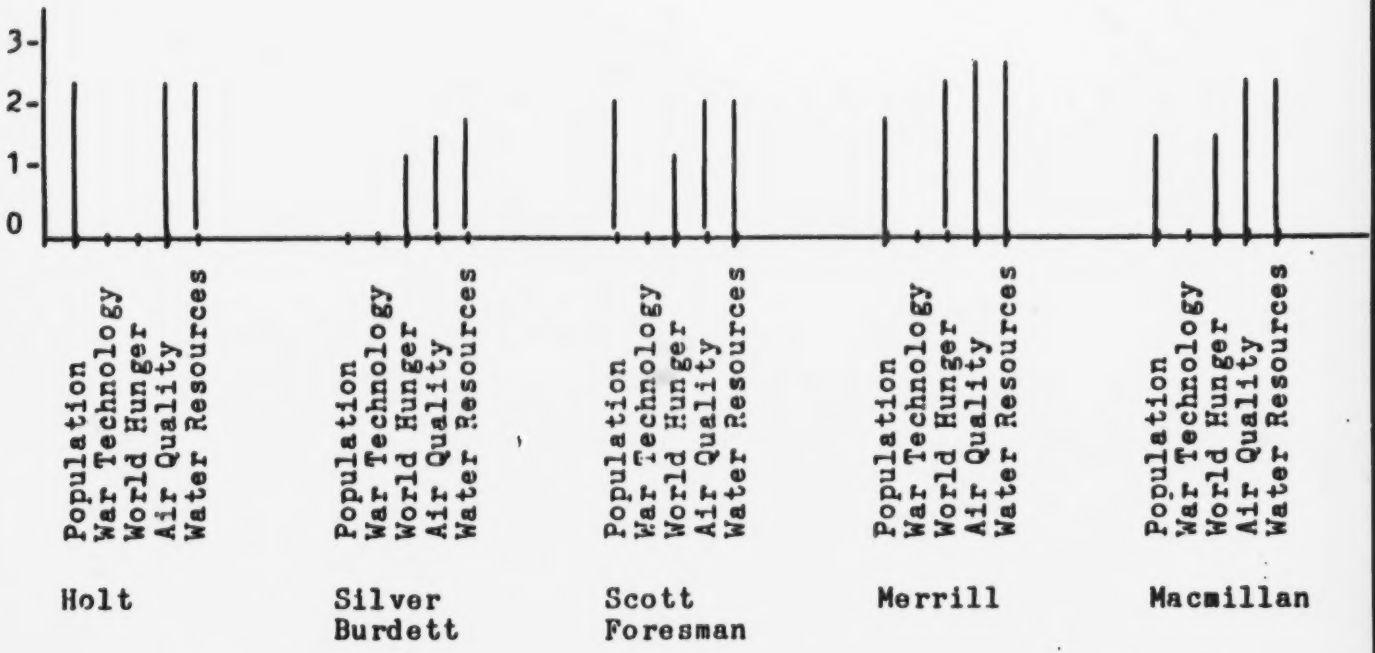
Degree of Depth In Which Global Issues Were Addressed In Sixth Grade Textbooks



0= not mentioned, 1=awareness level, 2=some depth (comprehension level)
3= great depth (application, analysis, synthesis, evaluation levels)

Table 7

Degree of Depth In Which Global Issues Are Addressed In Seventh Grade Textbooks



0=not mentioned, 1=awareness level, 2=some depth (comprehension level) 3=great depth (application, analysis, synthesis, evaluation levels)